

IN THE CLAIMS:

This listing of claims will replace all prior versions, and listings of claims in the application. Please cancel claims 69 and 70 without prejudice to or disclaimer of the subject matter therein. Please add new claims 77-80. Changes to the claims are shown with additions double underlined and deletions in ~~strikeout~~. No new matter has been added.

Listings of claims

Claims 1-46 (Canceled).

Claim 47 (Currently Amended). A device, comprising:

a touchpad sensor configured to detect a position and motion of an object in an x-y plane, said touchpad sensor further configured to detect a degree of force applied to said touchpad sensor in a z-direction and to output at least one sensor signal, the sensor signal being based on the position of the object, the motion of the object and the detected degree of force; ~~and~~

at least one actuator coupled to and spaced apart from said touchpad sensor, said actuator configured to receive a feedback signal ~~from the computer~~ and generate haptic feedback based on the feedback signal, the feedback signal being ~~correlated~~ associated with the sensor signal; ~~and~~

a linkage coupling the object and the touchpad sensor.

Claim 48 (Previously Presented). The device of claim 47, wherein a magnitude of the haptic feedback is proportional to the detected degree of force.

Claim 49 (Currently Amended). The device of claim 48~~47~~, wherein the haptic feedback is configured to simulate friction in the x-y plane.

Claim 50 (Currently Amended). The device of claim 48~~47~~, wherein the haptic feedback is based on data values associated with a graphical representation of a pen drawing object on a graphical display.

Claim 51 (Previously Amended). The device of claim 47, wherein said sensor signal is further based on a velocity of the object in the x-y plane.

Claim 52 (Currently Amended). The device of claim 51 or 47, wherein the haptic feedback ~~is~~ includes a texture sensation.

Claim 53 (Previously Presented). The device of claim 52, wherein the texture sensation is modulated as a function of the detected degree of force in the z-direction and the velocity in the x-y plane.

Claim 54 (Previously Presented). The device of claim 47, wherein the actuator is configured to generate the haptic feedback if the detected degree of force exceeds a predetermined level.

Claim 55 (Previously Presented). The device of claim 47, wherein the detected degree of force is operative to control an indexing function of said device.

Claim 56 (Previously Presented). The device of claim 47, wherein said touchpad sensor is configured to detect a contact location of a pointer member, the pointer member being associated with the object.

Claim 57 (Currently Amended). The device of claim 47, ~~further comprising a linkage mechanism configured to couple the object to said actuator, said~~ wherein the linkage mechanism being is configured to allow motion of the object in the x-y plane.

Claim 58 (Currently Amended). The device of claim 47, wherein the object is ~~one of~~ a mouse and a stylus.

Claim 59 (Previously Presented). The device of claim 47, wherein said touchpad sensor is a planar photodiode.

Claim 60 (Currently Amended). A device, comprising:

an object moveable in an x-y plane, the object being associated with a graphical representation of a cursor;

a touchpad sensor spaced apart from the object, the touchpad sensor configured to detect motion of said object in the x-y plane, the touchpad sensor further configured to detect a degree of force applied to said touchpad sensor in a z-direction; and

at least one actuator being configured to provide haptic feedback ~~to the object, the actuator being controlled based on~~ the detected degree of force applied to said touchpad sensor;
a linkage coupling the object and the touchpad sensor.

Claim 61 (Currently Amended). The device of claim 60, further comprising a control processor configured to send a control signal to said actuator to generate the haptic feedback, the control signal being based on at least the detected degree of force applied to said touchpad sensor.

Claim 62 (Previously Presented). The device of claim 60, wherein the haptic feedback is provided in the x-y plane of the object, the haptic feedback being configured to include a damping sensation, a magnitude of the damping sensation being based on at least the detected degree of force applied to the touchpad sensor.

Claim 63 (Previously Presented). The device of claim 62, wherein the damping sensation is proportional to the detected degree of force applied to the touchpad sensor.

Claim 64 (Previously Presented). The device of claim 60, wherein the haptic feedback includes a friction sensation, a magnitude of the friction sensation being based on at least the detected degree of force applied to said touchpad sensor.

Claim 65 (Previously Presented). The device of claim 64, wherein the friction sensation is proportional to the detected degree of force applied to said touchpad sensor.

Claim 66 (Previously Presented). The device of claim 60, wherein the haptic feedback is a texture sensation, a magnitude of the texture sensation being based on at least the detected degree of force applied to said touchpad sensor.

Claim 67 (Previously Presented). The device of claim 66, wherein the texture sensation is proportional to the detected degree of force applied to said touchpad sensor.

Claim 68 (Previously Presented). The device of claim 60, wherein said object is a mouse, and the detected degree of force applied to said touchpad sensor is proportional to an external force received at a top surface of the mouse.

Claims 69-70 (Canceled).

Claim 71 (Currently Amended). A method, comprising:

detecting a position and a motion of an object in an x-y plane using a touchpad sensor,
the object being coupled to the touchpad sensor via a linkage;

detecting with the touchpad sensor a degree of force applied to the touchpad sensor in a z-direction;

receiving a feedback signal from a computer, the feedback signal being based on data values associated with a position of a graphical representation of a cursor controllable by the object; and

outputting haptic feedback to the object via an actuator, the actuator being coupled to and spaced apart from the touchpad sensor, the actuator configured to output haptic feedback correlated with the feedback signal.

Claim 72 (Previously Presented). The method of claim 71, wherein a magnitude of the haptic feedback is increased in response to increases in the detected degree of force or pressure.

Claim 73 (Previously Presented). The method of claim 71, wherein outputting haptic feedback includes simulating friction.

Claim 74 (Previously Presented). The method of claim 71, wherein outputting haptic feedback includes outputting haptic feedback based on a velocity of the object in the x-y plane.

Claim 75 (Previously Presented). The method of claim 71, wherein outputting haptic feedback is based on detecting a predetermined level of force.

Claim 76 (Currently Amended). The method of claim 71, further comprising controlling an indexing function of said a user interface device based on the detected degree of force.

Claim 77 (New) The device of claim 47, wherein the linkage includes a pointer member configured to contact the touchpad sensor.

Claim 78 (New) The device of claim 47, wherein the linkage is further coupled to the actuator.

Claim 79 (New) The device of claim 60, wherein the linkage includes a pointer member configured to contact the touchpad sensor.

Claim 80 (New) The device of claim 60, wherein the linkage is further coupled to the actuator.
